Towards a Framework for Structuring Theory in IS Research

Completed Research Paper

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ABSTRACT

In the past, IS research has been criticized for its inability to build a cumulative tradition of IS-specific theory. We suggest that the difficulty in structuring theoretical contributions in IS is one facet of that problem. This has led to a situation in which a lot of theory generation in IS is not made apparent as such. Based on a conceptual review on theory, we design a framework to structure theoretical contributions in IS. Applying our framework, we show that IS research does offer a broad basis of early, substantive theories and even some more comprehensive theoretical accounts specific to our discipline that IS scholars could build on in a cumulative tradition. We use the context of theory generation in and for IS based on the Grounded Theory approach. In doing so, we hope to enable a more structured discourse on the current state of theory generation in IS.

Keywords

Theory framework, IS philosophy, grounded theory

INTRODUCTION

Theories provide the sciences with the crucial basis for the description, explanation, and the prediction of the phenomena they study— that is, offer an understanding of the what, how, and why (Whetten, 1989). In doing so, theory can also be a vehicle that informs and guides the discovery and creation of new knowledge by allowing researchers to build on more basic explanations already established by their colleagues. Thus, theories also facilitate the accumulation of knowledge in the process of scientific discovery. It is such a cumulative tradition that helps disciplines to advance their understanding of the investigated subjects and to use that knowledge to solve problems in practice (van de Ven, 1989). Examples for the centrality of theories can be found in the natural sciences (e.g., physics) and the social sciences (e.g., sociology and psychology) (Atmanspacher, 2007). In the Information Systems (IS) field, the need for a cumulative tradition of theory has been discussed ever since the first International Conference on Information Systems (Keen, 1980). Reasons for that are the legitimacy of the IS field in comparison to its neighboring disciplines (Frank, 2006; Lyytinen and King, 2004), the search for domain identity (Benbasat, 2001; Benbasat and Zmud, 2003), and the “race for credibility” in the scientific discourse (Weber, 1997).

However, due to a fast innovation cycle in information technology and a persistently changing attitude of users towards the application of that technology, generating such theory can be challenging in IS (Heinrich, 2005; Hirschheim and Klein, 2003). Hence it is no surprise that in its young history, only few theories specific to our discipline have emerged (Burton-Jones et al., 2004). As a result, IS researchers have been criticized as only providing a “mishmash of fuzzy thinking and incomprehensible jargon” (Dearden, 1972, p. 90) rather than a concise body of grand theories for their discipline; and others alike. To the contrary, many of the phenomena observed in IS research have rather been explained using theories from neighboring disciplines such as sociology or psychology on the behavioral side and computer science or engineering on the technical side (Baskerville and Myers, 2002; Gregor, 2006; Schneberger and Wade, 2007). While many scholars have complained about this lack of an IS-specific cumulative tradition of theory (e.g., Lee, 2001; Weber, 2003; Zmud, 1998), we believe that our discipline’s actual standing with respect to theory generation is better than its current reputation.

One factor that could explain this difference is that a lot of theory generation in IS in not made apparent as such – either explicitly (e.g., through the original contributors themselves) or implicitly (e.g., through later work building on their findings). Thus we suggest that a first step towards closing the gap between IS’ perceived and actual amount of theory produced is the development of a framework for structuring theory in IS research. This would enable an analysis and identification of theoretical contributions in IS; even beyond the few grand exemplars such as technology acceptance (Davis, 1989) or IS success (DeLone and McLean, 1992, 2003). We believe that such a framework is a first step towards structuring
the current state of theoretical work and accumulated knowledge in the IS field. We thus hope that the framework will enable future researchers to better build on our discipline’s foundations and make their own contributions more accessible for the theoretical discourse. Therefore research results become more transparent – in particular for other disciplines.

In pursuit of structuring IS theory, our paper is organized as follows: Section two briefly reviews the concept of theory in and outside of the IS discipline. Based on an identification of basic constituents and characteristics of theory, section three integrates these findings into a framework in order to analyze and structure theoretical contributions. Building on the suggested framework, section four reviews selected papers focusing on generating IS-specific theories in order to investigate the current state of theory generation from and for IS research. Section five discusses these findings in light of their implications for the role of theory in IS and the applicability of our suggested framework. Section six summarizes our work by highlighting its contributions, limitations, and opportunities for future research.

THE UNDERSTANDING OF THEORY IN IS RESEARCH

The Concept of Theory in IS Research

To determine what principal characteristics could be used to structure theoretical contributions in IS research we briefly review the concept of theory in our discipline. We acknowledge that a comprehensive review of the concept of scientific theory as well as the general concept of truth is a complex endeavor; particularly when speaking of an integrative discipline such as IS research. Therefore, we try to focus our review on those considerations and assumptions essential to the scope of our paper and refer the interested reader to the literature referenced herein.

Providing a common understanding of theory in our discipline is rather challenging (e.g., Burton-Jones et al., 2004; DiMaggio, 1995; Freese, 1980; Sutton and Staw, 1995; Weber, 2003), especially as it is often not a simple yes-or-no type question whether a given statement is theory or not, but could rather be understood as a continuum (Runkel and Runkel, 1984; Weick, 1995). Notwithstanding, the task can be approached from two principal directions: (1) Theory as the logical consequence or outcome of theorizing or (2) looking at the constituents that would make a statement a theory. While the former has received quite some attention and certainly is an approach worth following when trying to comprehensively define theory (e.g., Dubin, 1976; Freese, 1980), we focus on the latter.

Looking at the literature from adjacent fields, much emphasis is placed on concepts and their relations. Thus, the need to identify concepts along with sequential and/or causal arguments is often identified as one of the core building blocks in order to produce strong theory (Burton-Jones et al., 2004; Feldman, 2004; Gregor, 2006; Sutton and Staw, 1995; Whetten, 1989). Through these elements, theories are generally argued to enable explanations why or predictions when certain empirical patterns occur in observing a phenomenon (Glaser and Strauss, 1967; Gregor, 2006; Kaplan, 1964; Whetten, 1989). For example, Whetten (1989) emphasizes the importance of the why in suggesting that theoretical contributions need to go beyond the mere description of the what (i.e., concepts or constructs) by including the how (i.e., conceptual arguments) and why (i.e., causal arguments). Tying these thoughts together, Bacharach (Bacharach, 1989) offers one of the perhaps most concise attempts to define theory: The relations between constructs are captured via propositions which hold true within certain boundaries (i.e., assumptions about relevant contingencies such as, e.g., time, culture, space). As can be seen from table 1, these are also the components frequently referred to by seminal papers on theory and theorizing.

<table>
<thead>
<tr>
<th>Concepts</th>
<th>(Sequential) Relations</th>
<th>(Causal) Relations</th>
<th>Means of Representation</th>
<th>Scope</th>
<th>Explanation</th>
<th>Prediction</th>
<th>Applicability/Practicability</th>
<th>Falsifiability/Testability</th>
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<tbody>
<tr>
<td>Burton-Jones et al. (2004)</td>
<td>X</td>
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<td>Gregor (2006)</td>
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<td>Kaplan (1964)</td>
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<td>Glaser and Strauss (1967)</td>
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<td>X</td>
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<td>Whetten (1989)</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Doty and Glick (1994)</td>
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<td>Popper (1980)</td>
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Table 1. Theory components in select seminal papers.
Once suggested, and beyond its mere constituents, such a theory should not only advance a discipline theoretically, but that it needs to enable to solving of practical problems (Glaser and Strauss, 1967). As a consequence, the literature also highlights the attribute of being falsifiable or testable in practice as an important characteristic of theories (e.g., Doty and Glick, 1994; Popper, 1980).

Types of Theories in IS Research

While the conceptual constituents introduced above help to distinguish theories from mere statements, we suggest that there need to be additional criteria to better characterize, structure, and assess those that do qualify as theories.

Thinking about theories in IS research, Gregor (2006) suggests that some of the constituent properties are contingent on a theory’s purpose. She introduces a set of five theory types where each corresponds to a different purpose. The most basic of such purposes is making a phenomenon of interest accessible to scientific investigation. She introduces theories for analysis and description (type 1) as contributions that serve this purpose. They conceptualize a given phenomenon by translating it into an abstract representation that will allow the recognition of patterns between various instances of the respective phenomenon. With those patterns emerging from the empirical observation of the phenomenon, theories gradually grow beyond the mere description of the phenomenon and begin to enable explanations of why certain observations occur. The corresponding type 2 theories (theories for explanation) stress the causal and conceptual links between the various constructs that interact while the phenomenon takes place. Some theories can reliably predict observations without necessarily being able to explain why the predicted outcome occurs (theories for prediction; type 3). As a potential next step, theories integrate explanation and prediction into a comprehensive model (theories for explanation and prediction; type 4). Following the idea of the IS discipline as a science of the artificial (Gregor, 2009; Simon, 1996), an understanding of phenomena that incorporates some degree of explanation and prediction enables the design of a corresponding information system that acts in a way that constitutes a predictable intervention in the system and produce a desired outcome (theories for design and action; type 5).

Range of Theory

Another distinguishing characteristic of theories can be derived from once more looking at IS’ reference disciplines. Here, generating theory is often depicted as a process in which it emerges or is built based on a strong basis of descriptive narratives (Holmström et al., 2009; Van Maanen, 1989). While such empirical accounts help theoretical considerations to be based on fit and relevance with their principal problem domain (Glaser and Strauss, 1967), this process also highlights that knowledge grows by extension and that providing accounts of small but comprehensible events is a chance to start building cumulative theory (Sutton and Staw, 1995; Weick, 1989, 1992).

While this isn’t necessarily a natural starting point of any theory’s existence, it provides an opportunity to anchor one end of the range or breadth continuum. Here, substantive theories are early contributions that are often bound to a specific context or are contingent on a high number of yet unexplored factors possibly impacting the phenomenon (Gregor, 2006; Neuman, 2000). As theoretical statements are observed to be valid across various different instances of the phenomenon, following this process will produce theories of increasing scope (Dey, 1999). For example, Glaser provides guidelines for developing more advanced theory based on prior substantive theories (Glaser, 1978). Such mid-range theories show some degree of generalization either based on the empirical design used to support them or by diligently connecting them to established theoretical explanations of their conceptual statements (Merton, 1967). Finally, formal theories exhibit a high degree of generalizability, for example through repeated empirical testing and refinement and/or exhaustive knowledge about a phenomenon’s contingencies (Parsons, 1967).

In IS research, Lee and Hubona (2009) suggest that there are two general forms of validity of theoretical considerations. The formative validity of a theory describes a theory's property to adequately capture a phenomenon’s concepts and their relations and is achieved through a diligent theory building process. A theory’s summative validity means that it survives repeated empirical testing and that its external validity grows as the theory is able to model or predict more and more instances of the phenomenon.

Hence, small/substantive, mid-range, and formal/grand theories can co-exist and need to coexist in order to explain a complex social or socio-technical phenomenon.

TOWARDS A THEORY FRAMEWORK IN IS RESEARCH

The previous sections suggest that beyond their constituents, theories can be structured according to their type and range. Following this discussion, we suggest a framework for structuring IS theory which is depicted in figure 1.
The framework’s first dimension describes a theory’s type following Gregor (2006). Thus, the framework is able to distinguish the various interrelated perspectives on a phenomenon that theories offer. Looking at an established body of knowledge in IS, the framework suggests that the underlying understanding should capture most of the facets on this dimension. As it slowly becomes more and more comprehensive, the basic ability to describe and analyze will provide some basic degree of explanation. Alternatively, research will result in an ability to predict the outcome of the phenomenon. Once the occurrence of predicted outcomes can be explained, theories on the phenomenon will also provide some degree of control over the situation, enabling purposeful interventions in order to attain a desired outcome. Such knowledge can then be used to design meaningful artifacts. Thus, a type 5 theory could build on other, stand-alone theoretical contributions to inform its design propositions. In order to capture, structure, and assess the theoretical accounts on a given phenomenon, the framework needs to be able to account for these underlying facets.

The second dimension of the framework enables researchers to assess what range a theory is valid for. This dimension of the framework will help researchers to assess how valid a given theory might be for their work. While, for example, substantive theories could only inform design in their immediate subject area, more formal theories can arguably also be transferred to related areas. Alternatively, theories of a larger range might be built on the propositions and observations of smaller-range theories. This is particularly important in the design context, as, for example, an artifact designed based on theoretical explanation and prediction that is of a substantive range cannot be claimed to serve its designed purpose outside the underlying knowledge’s subject area.

An analysis of the current theoretical body in the IS discipline using the framework suggested above is likely to produce a very diverse picture. For example, theoretical concepts like the IS success model (DeLone and McLean, 1992, 2003) or the technology acceptance model (Davis, 1989; Davis et al., 1989) could be interpreted as theories for explanation and prediction that have already achieved a rather high range. Thus, they can be considered as formal (or at least mid-range) theories that motivate further work in specific domains – for example, IS research using the TAM to explain a certain phenomenon in a specific domain or create a (domain specific) substantive theory. Another interesting perspective could be to look at design theories and the justificatory knowledge they contain (Gregor and Jones, 2007) to determine whether the underlying theoretical concepts are already mature enough to support a design theory’s potential claim for generalizability. However, we think that a focus on the state of theory generation in IS and a corresponding investigation of the possible foundations for emerging IS-specific theories is a no less promising area for an investigation using our framework. Beyond this content, the application of our framework will help us to determine whether or not it is suitable to classify existing IS research.

THE EXAMPLE OF GROUNDED THEORIES

Grounded Theory in IS Research
For our first sampling of theory generating papers in the framework, we aim at emerging theories in the IS discipline. The reason for this is the IS discipline’s lack of a widespread cumulative tradition of domain-specific theory (Lee, 2001; Weber, 2003; Zmud, 1998). As Grounded Theories (GT) – by definition (Glaser and Strauss, 1967) – focus on substantive domain-specific phenomena, they are likely not influenced by a priori use of theoretical considerations from other fields. Hence, GT

![Figure 1. Proposed Theory Framework](image)
contributions provide a good opportunity to observe IS-specific theories and, consequently, allow us to derive a framework for IS-specific theory; an assumption we feel supported by Urquhart et al. (2010). While we acknowledge that there are, of course, other ways and methods to generate IS-specific theory, we chose to focus our analysis on GT-based theories as a first pragmatic sampling for our framework.

Grounded theory, originally suggested by Glaser and Strauss (1967), provides an interesting setting to illustrate our framework’s logic. In a recent review of GT-based work in the IS field, Urquhart et al. (2010) show how mere descriptive statements about a phenomenon in a bounded context can become formal, theoretical concepts. As the theory matures along this path, both the theory’s scope and degree of conceptualization are likely to grow. While the basic structure and logic of their GT-framework supports our conceptualization, we believe that the process depicted in GT-based theory emergence (evolution of the emerging theory from descriptive statements on a bound context into formal theory) does not hold for a general theory framework for IS research.

A Review of Grounded IS Theories

To identify a set of GT-based studies in IS research, we conducted a literature review (Webster and Watson, 2002). To identify relevant papers and ensure a comparable standard we reviewed the extended AIS senior scholar’s basket of journals (Saunders et al., 2006). Within the respective databases, we conducted an extended search for articles that contain the phrase “grounded theory” in their title, abstract, or keywords. The rationale for this approach is to exclude articles that only refer to GT superficially or extend work of previous GT studies. We identified a total of 27 articles which the two authors analyzed separately to ensure inter-rater reliability (Tinsley and Weiss, 1975). This first step of the review was conducted to exclude papers that deal with GT from a methodological standpoint (1 paper). Also, we intended to identify papers that draw on methodological recommendations that emerged from Glaser’s and Strauss’s (1967) original work. Some of the papers in our sample that draw on this so called Grounded Theory Method (GTM) do not explicitly build theories (15 papers). As we want to investigate IS-specific theories, our interest consequently lies with the remaining papers that actually produce GT. Taken altogether, we identified 11 papers (see table 2) that build IS-specific grounded theories.

<table>
<thead>
<tr>
<th>Journal</th>
<th>Papers building is-specific grounded theories</th>
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<tr>
<td>EJIS</td>
<td>-</td>
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<tr>
<td>ISJ</td>
<td>(Goulielmos, 2004; Seeley and Targett, 1997)</td>
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<tr>
<td>ISR</td>
<td>-</td>
</tr>
<tr>
<td>JAIS</td>
<td>(Day et al., 2009)</td>
</tr>
<tr>
<td>JMIS</td>
<td>(de Vreede et al., 1998; Pauleen, 2003; Scott, 2000)</td>
</tr>
<tr>
<td>MISQ</td>
<td>(Levina and Vaast, 2008; Orlikowski, 1993)</td>
</tr>
<tr>
<td>JSIS</td>
<td>(Petrini and Pozzebon, 2009)</td>
</tr>
<tr>
<td>JIT</td>
<td>(Palka et al., 2009; Webb and Gallagher, 2009)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11 papers</strong> <strong>Total</strong></td>
</tr>
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</table>

Table 2. IS-specific grounded Theories

This group contains papers that build an IS-specific theory that is grounded directly in empirical observations from an IS-specific context. Using our framework to analyze and rate the 11 papers identified above, we were able to assign papers to the various fields of the framework as shown in figure 2.

Starting from the lower left corner of the framework, Seeley and Targett (1997) provide an example for a substantive theory of description and analysis. Using a set of cases, the authors provide a specific analysis of basic dimensions of user behavior that can be used to describe senior executives in their use of IS. As they limit their statements to senior executives, a specific instance of the more general user, their work and the conclusions they draw seem to be good for this substantive context only.

A very strong group, potentially due to the nature of GT-based studies, is substantive theories for explanation. Six studies (Day et al., 2009; Levina and Vaast, 2008; Orlikowski, 1993; Pauleen, 2003; Petrini and Pozzebon, 2009; Scott, 2000) fall within this group. One of the most referenced papers from this group is Orlikowski’s (1993) work on CASE tools. Based on two in depth case studies, she develops a theoretical framework that helps to better understand the processes of organizational change connected to CASE tool adoption and usage in an organization. Through iterative data collection and analysis, Orlikowski was able to identify a complex model that explains the interaction of institutional context and strategic conduct shaping the adoption and use processes of CASE tools in both radical and incremental processes. Given the limited number of cases and the explicit aim of designing a theory emerging from her observations Orlikowski’s papers is an example for substantive theories.
Another example is the paper by Day et al. (2009), in which the authors describe what can be learned with respect to information-flow impediments in supply chains for extreme scenarios in the context of the disaster relief effort in the aftermath of hurricane Katrina. Their work offers a theory for explanation with respect to the problems and mitigation strategies encountered in the Katrina case. Given the single case nature, their work is likely to be limited to a substantive context. However, their effort to enfold extant literature and to compare their case to the theoretical attributes of general disaster scenarios enables them to make a case for the application of their model in other instances of this problem class. Hence, their work does show that individual theoretical contributions have the potential to change over time. Moreover, the design recommendations they make also show that their contribution leans towards some theoretical content on design and action. Beyond the vertical movement through the framework, also horizontal movement seems to be possible.

Palka et al. (2009) contribute a theory for prediction. They describe their contribution as follows: "The outcome is a grounded theory of mobile viral marketing with respect to the consumer and his social network, decomposing the mobile viral effect and identifying the determinants of reception, usage, and forwarding of mobile viral content" (p. 172). Thus, their work gives practitioners an understanding and some control of the situations they find themselves confronted with. This, in turn, enables the prediction of consumer behavior in the mobile viral marketing context. As these statements are also applicable to users outside their immediate sample, exhibiting a certain degree of generalizability, they do provide a mid-range theoretical contribution.

De Vreede et al. (1998) use a grounded analysis of the acceptance of a group support system (GSS) in Africa to identify constructs refining the technology acceptance model (Davis, 1989; Davis et al., 1989). Their work not only provides an explanation of the adoption and application of GSS in three African countries. It also enables them to draw conclusions with respect to important factors influencing the acceptance of GSS in their context; thus providing decision makers in this context with some predictive power in terms of increasing the acceptance of a system they intend to use. Their theory’s mid-range is equally suggested by two facts: First, the refinement of TAM into an African context constitutes a context-specific refinement of a more formal theory. Second, their findings are likely to be generalizable to other African (or at least West-African) countries. Moreover, any differences in findings between this and studies form other cultural backgrounds may lead to a larger scale understanding of the intersection of culture and technology.

Our review also revealed two papers with theories for design and action. Webb and Gallagher (2009) suggest a methodology for multimedia systems development which they ground in a study of development processes across 16 companies. Goulielmos (2004) identifies a company’s approach to systems development as an important factor that should be incorporated into a process theoretical understanding of the software development process and makes corresponding design recommendations as to how software development processes should change. While both present design recommendations, the specificity to multimedia systems present in the study by Webb and Gallagher (2009) clearly constitutes a substantive contribution. Goulielmos (2004) on the other hand pays great attention to attaining a certain degree of generalizability. Not only does his study analyze software development processes on more abstract levels, but his sample also contains both in-house and consultant-based approaches to software development.
Interpretations
Looking at the results of our review, we recognize that the framework has helped us to analyze theory development work in the IS-discipline. It provided a structure that allows characterizing theories present in a set of grounded theory studies. From that structure we draw the following conclusions. First, the analysis of the GT sample provides some insight into the current state of theory generation in the IS discipline. Counting only 27 papers, the little attention that grounded approaches have received in the field is surprising. While we acknowledge that this comparably low number might be due to our selection criteria, it is remarkable that only 11 of the 27 papers aim (explicitly or implicitly) at generating IS theory. Nevertheless, second, the review did show that there are quite a few emerging, substantive or even mid-range theories across all theory types. However, current IS research often seems to be reluctant to rely on such early and often small theories or theoretical accounts that have been produced from an IS-specific context. Quite to the contrary, IS researchers seem to be more enthused by relying on theories from adjacent disciplines (Weber, 2003). Should that be due to difficulties in identifying and assessing early, emergent theory specific to our discipline, we hope that the framework we suggest helps to structure the current state of our discipline’s theoretical body of knowledge – or, at least, be a first step in that direction.

Looking at the framework’s benefits, our work shows that it enabled us to abstract the studies’ theoretical contributions and analyze and discuss them explicitly. Thus, an application of the framework can help to make the theoretical contributions of papers more apparent, either explicitly or implicitly.

DISCUSSION OF THE RESULTS
In our review, our framework helped us with the challenge of identifying the theoretical core of the contributions we analyzed by providing the relevant properties and dimensions of theory, hence enabling (perhaps especially young scholars) to better grasp theoretical work that they can build on. Such a more structured approach to analyzing theory on our ways into research projects as well as framing our results accordingly on our way out could help to advance the discussion on the role of theory in the IS discipline.

Through its perceived benefits, we also learned something about how to apply the framework. Our review has shown that there does not seem to be a predetermined, natural path of theoretical development in the model. The work of de Vreede et al. (1998) is a case in point in which the authors integrate their findings with the technology acceptance model to help explain their observations, thus refining the model’s propositions to better fit a specific context. Hence, such research will provide a mid-range theoretical contribution building on a grand, more formal concept. Thus, our review has also revealed patterns in which a given model is refined to better match a specific context, that is, be less generalizable. A contrary example is the work by Day et al. (2009) which clearly shows an upward trajectory through the model. This can be interpreted as an increasing extension of the theory’s validity through repeated empirical testing and theoretical refinement. As discussed above, we also found evidence suggesting that theories can move sideways. Thus, looking at the range of theory, the process of extending and refining a theory is likely to show both ascending and descending paths through our framework. While the emergence of theory from a GT-based study is a case in point for an ascending pattern, using established grand theories as a source of conceptual arguments to investigate a new phenomenon shows a specialized refinement of that formal statement into a bound context.

As a consequence, none of the dimensions we suggest shows a somehow natural path of evolution, development, or maturation of theory. With respect to the type of theory, research following the design science paradigm (e.g., Hevner et al., 2004; Peffers et al., 2008) might come up with a substantive theory for design and action from the scientific analysis of a specific implementation project without the prior establishment of a theory for description and analysis. Especially in the context of interpreting IS research as some form of a science of the artificial (Gregor, 2009; Simon, 1996), the notion of design theory suggests that various types of theories depend on each other to work and make lasting contributions (Gregor and Jones, 2007; Pries-Heje and Baskerville, 2008). Gregor (2006) provides an elaborate discussion on the actual interrelationships between the theory types.

Of course these observations raise the question whether certain types of theories correlate with specific ranges or whether there are specific profiles for the various methods used to generate IS theory. While answering these questions is an important task to further advance our discipline’s discussion on what role theory can, should, and must play in IS research, both our review’s sample and the paper’s scope certainly leave opportunities for future research.

CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH
In light of the ongoing discussion on our discipline’s theoretical core, our paper suggests a framework to structure and assess theoretical work in our discipline. Using properties and dimensions of theories established within and outside of IS, we
suggest that dealing more explicitly with the theoretical contributions of the work in our discipline has great potential to help with the challenges of legitimacy of the IS field in comparison to reference disciplines (Frank, 2006; Lyytinen and King, 2004), the search for domain identity (Benbasat, 2001; Benbasat and Zmud, 2003), and the “race for credibility” in the scientific discourse (Weber, 1997).

In terms of the ongoing discussion on domain identity (e.g., Galliers et al., 2008) the framework helps to identify theory as a unifying element in IS research, regardless whether it stems, for example, from a North-American or European research tradition, whether it was created following positivist or interpretive guidelines, and so on. For all these different backgrounds, an improved communication of research results – within and outside the IS field – and the ability to build a more structured, cumulative body of knowledge will help to gain in the race for credibility within the sciences. Thus our work’s theoretical contribution is a step towards structuring the current state of theoretical work and accumulated knowledge in the IS field. This will enable future researchers to better build on our discipline’s foundations all the while making their own contributions accessible for the theoretical discourse – not only for IS scholars but also for their colleagues from neighboring fields. Using GT-based research as an example, we show how our framework can be applied to deliver this structure to research and to make various contributions more easily accessible.

Of course, more research and active discourse is needed to develop a concept for “IS theory” which addresses the discipline’s nature as a science of the artificial and helps to build a cumulative research tradition. While we believe that our results do have some interesting implications with respect to the next steps in this discourse, the results also need to be carefully evaluated in light of our work’s limitations. A first limitation is the fact that, as of yet, we only applied our framework and its analytical capabilities to the rather narrow GT example. The framework’s proposed potential in ex-ante analysis of the state of the theoretical debate to inform a starting research project remains yet to be tested. Also, it is important to highlight that while GT-based papers are a promising venue to explore nascent and emergent theories, these certainly are likely to show a tendency to cluster together at the lower end of the range dimension. As such, we’d like to reemphasize that the GT sample is perhaps not the most powerful example in terms of illustrating the analytic framework. However, we wanted to also use the sample to illustrate that more theory actually present in published IS literature than IS is given credit for and that a framework such as ours thus can yield important insights into structuring our contributions and our discourse. Second, within our GT review, we are aware that the journals we have chosen are likely to show variances with respect to the number and nature of GT-based papers they published. Moreover, also journals outside the basket of eight, especially the Journal of Information Technology Theory and Application as well as the Scandinavian Journal of Information Systems, published remarkable GT-based research. Third, and beyond the journal-related issues, also our sampling of GT-related papers impacts our results. Some of the journals also published GT articles in IS that are not labeled so in their titles, abstracts, or keywords (e.g., Feller et al., 2008; Lederer and Mendelow, 1990; Sarker and Sarker, 2009). For reasons of consistency of our search criteria and overall feasibility of our review we decided to not include these in the review.

Looking at this methodological approach, we want to highlight an important property of our review: In the context of this report, the literature we sampled is not intended to be an exhaustive account of all the IS studies that build GT or theory in general. However, instead of a complete overview and classification of such publications, we rather intend to select a set of exemplary articles that help us illustrate the proposed tenets of our framework. Finally, we acknowledge that the review and definition of theory we conducted is a first, pragmatic approach to that topic and should be extended, for example, by a more elaborate analysis of the impact of epistemological considerations.

Especially this last point seems to be a promising venue for future research. Differentiating research traditions or epistemological paradigms could provide interesting insights into whether, how, and why these offer different patterns when they deal with theory. A similar analysis could provide interesting insights into the differences, commonalities, and especially the potential to complement each other with respect to qualitative and quantitative research.

Another opportunity to structure and extend our understanding of our discipline’s current theoretical standing would be to rate and analyze further methods for theory generation or established theoretical systems. Especially looking at the process in which some of these theories matured through integrating a growing body of knowledge is a promising stream of future research. In this context, the DeLone and McLean IS Success Model offers an interesting historical development. Since the introduction of the first version (DeLone and McLean, 1992), there have been two major cycles of revising, extending, and integrating the body of knowledge around this model (DeLone and McLean, 2003; Petter et al., 2008). It would be interesting to see how it moved through the framework we suggested and what can be learned about theory development in IS. Similar research opportunities exist for other theories used in IS (Schneberger and Wade, 2007). This could also help put papers in the yet unpopulated fields of the framework and investigate the nature of their theoretical contributions.

In its current state, the framework does not cope with all these aspects and represents more of a guideline or discussion starter. We are convinced that an explicit discussion of the role of theory in IS research will help the IS discipline to mature
and to “catch up” in the race for credibility (Weber, 1997). While great theories – or great theoreticians for that matter – might not need such a framework, it could help the rest of us to refine our expectations towards theory in our field. In doing so, we could improve our understanding of what theories are and what role they can play in the context of IS research. Beyond this, a more refined conceptualization of theories and their role can help IS researchers – whether they build GTs or not – to frame their results in a way that makes them a valuable and sustainable theoretical contribution. Enabling researchers to build on an established framework to describe their theoretical contributions could be an important contribution to facilitate this goal. While this might make the framework obsolete once the theoretical core of our discipline has matured, at the very least it will have helped to make even small pieces of empirical observation accessible to building a cumulative tradition in IS and make them valuable contributions to build, extend, or refine IS-specific theories along the way.

REFERENCES